

# Fire Research for Safe and Durable Wood Structures

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# Forest Service R&D

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- Northern Research Station
- Pacific Northwest Research Station
  - Pacific Wildland Fire Sciences Laboratory
- Pacific Southwest Research Station
  - Forest Fire Laboratory, Riverside, CA
  - Center for Urban Forest Research, Davis, CA
- Rocky Mountain Research Station
  - Fire Sciences Laboratory, Missoula, MT
- Southern Station Research Station
  - Southern Center for Wildland-Urban Interface Research and Information
- Forest Products Laboratory, Madison, WI
- International Institute of Tropical Forestry, Rio Piedras, Puerto Rico

# Forest Products Laboratory

Chris Risbrudt, Director

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## Wood Products

*Michael A. Ritter*  
*Assistant Director*

- Economics and Statistics Research
- Engineered Properties and Structures
- Durability and Wood Protection Research

## Wood, Fiber and Composites

*Theodore H. Wegner*  
*Assistant Director*

- Composites Sciences Research
- Institute for Microbial and Biochemical Sciences
- Forest Materials Modification Research
- Fiber and Chemical Sciences Research

# Fire Research Forest Products Laboratory

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- **Durability and Wood Protection Research Work Unit**
  - Carol Clausen, Project Leader
- **Fire Research Team**
  - Robert White, Wood Scientist
  - Mark Dietenberger, Research Engineer
  - Comazel Caldwell, Technician
  - Anne Fuller, Technician





# Ensuring adequate structural performance of engineered wood products in fires

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## Recent accomplishment:

- LVL, PSL, LSL
- Char rate and tensile loaded fire resistance tests
- Validation of design procedure for calculating fire resistance rating.



# Ensuring adequate structural performance of engineered wood products in fires

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## Current project:

- Methods for Calculating Fire Resistance of Structural Wood Members with Directly Applied Protective Membranes
- Gypsum board and wood panel products.



# Ensuring adequate structural performance of engineered wood products in fires

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## Current project:

- Small-scale test method for elevated temperature evaluation of adhesives for finger-jointed lumber to be used in fire-rated assemblies
- Project of Engineered Properties and Structures Research Work Unit





# Minimizing contribution of new forest products to fire growth within buildings

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## Recent accomplishments:

- Analytical models of fire growth applied to:
  - Room corner
  - E 84
  - LIFT
  - Exterior surfaces of buildings in WUI
- Cone calorimeter data as input



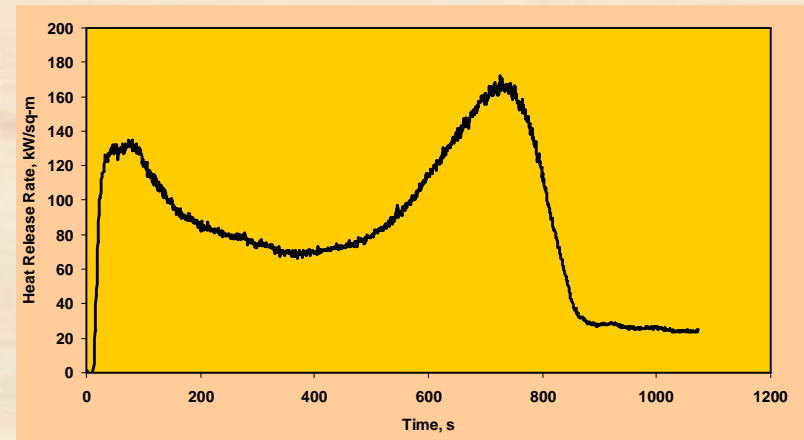


# Minimizing the contribution of new forest products to fire growth within buildings

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## Current project:

- FPL has database of cone calorimeter test results.
- Averages or selected data points reported in publications.
- Objective is public domain compilation of the time dependent data for tests cited in FPL publications.



# Using fire-retardant treatments to improve fire performance of wood-based products

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## Recent and present activities:

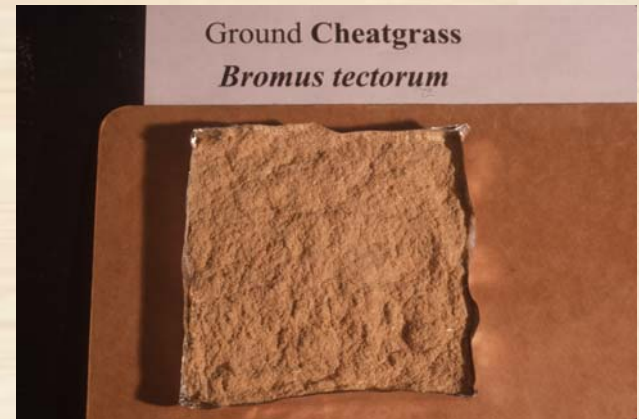
- Cooperative projects with internal and external partners
- Emphasis on FR treatments for composite products
- Using analytical flame spread model to provide estimates of E 84 FSI from cone calorimeter test data.



# Improving survivability of wood structures in the wildland-urban interface

## Recent accomplishments:

- Cone calorimeter testing of vegetation
  - California ornamental plants for home landscaping
  - Cheatgrass: Impact of historical CO<sub>2</sub> levels.
  - Northeastern vegetation: invasive vs. native species





# Improving survivability of wood structures in the wildland-urban interface

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## Current projects:

- Testing exterior wood products
- Further development of fire growth routines
- Collaboration with PSW Res. Station on improvements to ecoSmart web site





# ASTM Standard activities

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- Committee D-7 on Wood
  - Improvements to D2898 Exterior weathering of FR materials
- Committee E-5 on Fire
  - New standards for testing and classification of landscaping plants for homes in WUI



# Additional information

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## Web site:

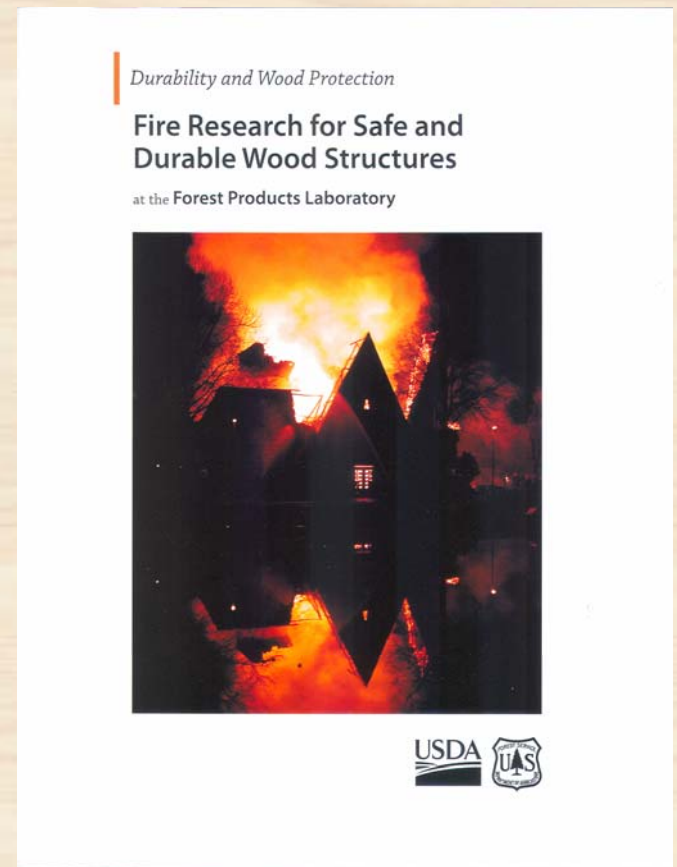
- [www.fpl.fs.fed.us](http://www.fpl.fs.fed.us)

## Brochure:

- [www.fpl.fs.fed.us/rwu4725/fpl-fire-research-for-safe-durable-wood-structures.pdf](http://www.fpl.fs.fed.us/rwu4725/fpl-fire-research-for-safe-durable-wood-structures.pdf)

## List of fire research publications:

- [www.fpl.fs.fed.us/document-lists/firelist.html](http://www.fpl.fs.fed.us/document-lists/firelist.html)



# Questions?



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